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# Observations on the Status of Corn Growing in California

By M. E. SHERWIN



Grand champion single ear of corn. Winner of \$1,000 Kellog trophy, Fourth National Corn Exposition, Columbus, Ohio, 1911.

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## INTRODUCTION.

The latest statistics of corn grown in California show the total acreage in 1910 to have been 49,000; the production 1,838,000 bushels, and the value of the crop, \$1,470,000. The demand for corn is continually increasing. This, together with the fact that the farm value per bushel in California is more than twice that for the general average for the States, naturally raises the question, "Can California not increase her corn planting with profit?"

At the solicitation of a number of commercial bodies in the State, as a portion of the work covered by the appropriation for cereal improvement, some preliminary investigations were started in 1909 looking toward an answer to the above question, and the possibilities of improvement of the corn crop, culturally, and otherwise.

Previous to the laying out of these investigations, Mr. M. E. Sherwin, then connected with this Station, and an experienced corn grower, was detailed to make a preliminary examination of "The Status of Corn Growing in California."

This circular will soon be followed by a bulletin devoted to a study of California seed corn with suggestions as to its improvement, and later by others dealing with varieties best adapted to California conditions and cultural methods.

Mr. Sherwin's report is presented herewith, with the recommendation that it be printed as a circular.

G. W. SHAW,  
Chief of Experimental Agronomy Division.

# OBSERVATIONS ON THE STATUS OF CORN GROWING IN CALIFORNIA.

By M. E. SHERWIN.

California\* produces but a small acreage of corn, ranking thirty-sixth among the different states in acreage grown in 1909. Yet in yield per acre, she ranks eleventh the same year, and third in both farm price per bushel and farm value per acre. Moreover, the yield per acre in California is 34.81 or 9.3 bushels more than the average of the United States, and moreover, the farm value per acre is more than twice that of the general average of the states. In considering these comparisons, the question naturally arises as to why the acreage grown in California is not larger. To gain information on this point, and to get a general view of the corn growing conditions of the State, lists of questions were sent by the writer to one hundred and twenty-five men in different parts of the State who are engaged in corn growing or who have previously had experience in corn growing in their respective localities. These lists covered in general the main points of culture, such as time, method and thickness of planting; cultivation, suckering, harvesting and yield. It was desired to find along what lines and to what extent conditions of corn growing in California differ from conditions of the same industry in the Middle West, or central corn growing section of the United States.

Further, as some work was about to be undertaken looking toward corn improvement, it was desirable to know in what way the money to be expended for this purpose should be used to give the best results; in other words, to find what improvements are most needed and in probability most easily obtained, whether in seed or in cultural methods used. A summation of answers received from growers to whom the questions were sent, is not the prime purpose of this paper, but a discussion of the subject covered by the questions, together with numerous other points which were suggested by the answers received, all of which were followed up as far as possible by personal interviews in the field, will be given.

As supplementing these reports from growers, a trip for personal inquiry and observation was made into those parts of the State giving the most attention to this crop, except the Imperial Valley.

The two main questions ever in mind, which also were often put as direct questions to the growers, were, "Why do you grow as much corn

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\*Figures for comparisons were obtained from the U. S. Department of Agriculture Year Book for 1909.



FIG. 1.—Cornfield of Mr. W. W. Sunbury, Princeton, Colusa County, California.



as you do?" and "Why don't you grow more corn than you do?" These two questions when not asked and answered directly were asked and answered indirectly through a number of questions regarding the details of corn growing, and when asked, were followed by a discussion of details. As the growers usually have certain well defined reasons for growing as much corn as they do and for not growing more, a mere statement of these reasons will be given, indicating also the section to which they apply, while a fuller discussion will then be given the details in order to show the main facts in their proper setting.

### REASONS AGAINST GROWING CORN.

The reasons given against corn growing are three in the main: *first*, the problem of getting the work done, which is perhaps the most serious at present; *second*, the expense of growing the crop or the relatively small profit to be realized per unit of expenditure as compared with the growth of other crops; *third*, the lack of water. All sections considered, where corn is now grown the labor problem is undoubtedly the most serious of the three. Every man who attempts to grow corn on a large acreage or even more than to fill in some odd piece of land and who depends on hired help to do the work, has the same tale of regular "month" men leaving at the time corn most needs cultivation to go with a harvester or hay baler. He finds, also, that it is next to impossible to get any member of the transient class of labor to enter the cornfield even to cultivate, much less to hoe or sucker the corn. In the Middle West where corn is a principal crop, and where the hired help is usually one or more neighbor's boys, no one of the hired men considers himself too good to work in the cornfield. Not so in California. The work of corn growing seems to have been given largely to the Orientals at an early date, with the result in part that the white labor separated themselves from it more and more and came to feel that it was beneath them. Not wholly so, however, for there are other conditions that obtain, which make the work of corn growing in California more of a drudgery than in the Middle West, and it is the presence of these conditions that is largely responsible for the Chinese having been given nearly a monopoly of the labor in an earlier day and for having divorced the white labor from it. The excessive growth of suckers in the State, seeming to call for the disagreeable labor of pulling or cutting, commonly called suckering, is one of these conditions. This is work to which the Oriental's back is better suited. Add the labor of suckering to the other labor of corn culture as it exists in the Middle West, and this in the burning heat of the summer sun in the Great Valley with the lack of breeze which necessarily exists in the cornfield, and you have a condition which would nearly overcome even the

“neighbor boy” labor of the Middle West, but which the Chinese can endure fairly well.

Furthermore, after the corn is grown, the conditions of harvesting are not so attractive in California as in the Middle West. A thicker and harsher husk in this State makes it hard to get white labor to harvest the corn because of injury to the hands in husking. At all events, the labor of corn growing fell to the Chinese, and the Chinese have largely disappeared till only a few of the older ones remain, and they are too old to do the amount of work they could formerly do. The Mexican peons are now probably doing more of the labor of corn grow-



FIG. 2.—A cornfield in Tulare County. Corn 15 feet high; yield 65 bushels per acre.

ing than the Chinese, but even the number of available peons is limited and their contracts to do the husking are so readily broken by them that they can but be rated as an exceedingly unreliable class. To sum up the labor question, then, we may say that white labor is rarely obtainable and is very uncertain; that the Chinese, though fairly reliable, are old and too few in number; and that the Mexican peons are unreliable. Neither is there enough work in the cornfield to induce bands of Japanese laborers to come in and do the work. Thus we find the labor question in corn growing a peculiar one but no less a serious one.

Although the labor question is the most serious one at present where corn is now grown, a factor which has in certain sections most largely decreased the area devoted to that crop is the profit derived from it as

compared with the profits to be obtained from other crops. The section which shows most plainly how other crops may replace corn because of their larger profits is that part of the southern coast region embracing Ventura, Los Angeles, Santa Ana, and Orange counties. Not many years back this section grew corn as a prominent crop, but with the advent of citrus fruit, lima beans and sugar beets, the acreage of corn and its relative importance as a farm crop have become insignificant. The Merced River bottom lands have also reduced the acreage of corn by perhaps fifty per cent in the last decade, but here scarcity of help and an actual reduction in yield of corn per acre have made corn less profitable not only relatively, but actually. Indeed, from all over the State have come numerous reports of profits from corn growing being exceeded usually by profits from other crops, notably alfalfa, barley and deciduous fruits, in addition to those crops mentioned above. In fact, almost every other crop seems to be more profitable in some places and some other crop more profitable in almost every place. This is true, speaking of the corn crop as a profit maker by itself, not considering its indirect use and value in rotation with other crops. Exceptions to this are the overflowed lands of the Sacramento River where a late spring crop must be grown; possibly part of the reclaimed tule lands, and miscellaneous smaller overflowed or naturally wet lands and odd pieces for various reasons not planted to something else. However, there is a small sprinkling of farmers in nearly all sections who consider corn growing as profitable in their respective sections as the crop most largely grown. But some of these limit their statement by saying that this is true with corn at present prices (1908-1909).

*Corn smut and corn worms.*—In three localities, viz., south of Fresno, between Laton and Kingsburg; along the Merced River, and near Santa Ana, smut has been so common in the corn at times as to considerably lessen its profitableness. It is said that south of Fresno and around Santa Ana for a period of several years corn was almost abandoned on account of the prevalence of smut. Rotation with other crops is recommended to lessen this disease. The corn worm does immense damage all over the State, except in certain varieties of corn which pass the roasting ear stage very quickly; but while this works as a factor against corn growing by lowering the yield and grade of shelled corn, it does not appear to have alone ruled corn growing out of any section. The blackbird is another pest which, coming in great flocks, destroys much corn in the roasting ear stage and has been a strong factor on the tule lands of the Santa Ana country and of the Sacramento Valley in limiting the profit and hence the area of corn. While the blackbird does not do the total damage that the worm does, because not so widespread, its depredations are more severe in the localities mentioned. The loss occasioned by the worm can be and in some places is lessened by plant-





FIG. 3.—A cornfield at Government Plant Garden, Chico, Butte County, California. 32 varieties under test in this field.



ing a little sweet corn near the field corn, as the moth of which the worm is a larvæ, will select certain varieties of sweet corn in preference to dent or flint corn on which to deposit its eggs. No preventive which is practicable can be offered to the blackbird.

*Effect of excessive heat.*—Another fact which works against corn growing in the Sacramento Valley is the blistering and burning of the tassels by the sun before the silk is ready to receive the pollen. This seems to be due not alone to excessive heat of the sun, but also to the fact that there is often a considerable time between the appearance of the tassels and the silk. For some reason not understood, the silks are so late in appearing that very moderate weather must be had to allow the life of the pollen to remain until fertilization can be effected. Of course this necessarily reduces the yield of corn by causing a large per cent of the ears to be unevenly filled.

*Trouble from suckering of corn.*—The growth of suckers is a matter of importance and is to be considered when viewing corn growing in relation to profit. The probable causes of this growth of suckers is discussed later, but a discussion of the practice of dealing with the suckers will be given here. It seems significant that the most experienced corn growers in this State, aside from the Chinese, those who have grown any considerable area for a number of years, have quite generally given up the practice of removing the suckers, if they once practiced it. Their reason is that it does not pay. Other men who do not grow corn every year find it too much work to remove the suckers and laborers too hard to get. On the other hand, some farmers find it necessary to remove the suckers in order to get corn. Still others find little difference in weight of corn produced whether suckers are or are not removed, but consider that it pays to remove them because the quality of the corn will be better and the labor of harvesting will be enough less to pay for the labor of removing the suckers. The cost of removing the suckers varies from fifty cents to three dollars and fifty cents an acre, with an average cost of about a dollar and a half. But it must be remembered that it is exceedingly difficult to get labor at this price to sucker the larger fields. Even where the Chinese have full charge of the corn growing and do all their own work, the practice of removing suckers is becoming less. A Chinaman on the Merced River explained it by saying that when they (the Chinamen) were young, they could sucker two or more acres a day, but now with all the Chinamen getting old, half an acre is a hard day's work. In all probability, the removal of suckers will not pay except in small areas where the grower has regular help enough to do the work, or in larger areas where either the land is very dry or the stand too thick. But if labor could be obtained to do the work at a reasonable rate, it would probably pay to remove the suckers from nearly all varieties of dent and flint corn



FIG. 4.—A cornfield in the Sacramento Valley, California.

on nearly all land. In many cases this would result in superiority of both yield and quality.

*Irrigation often necessary.*—We have termed the labor problem the most serious in connection with corn growing in its present localities and have shown how competition with other crops has caused a reduction in the area grown in certain sections. But there is a very large area on which corn was never grown, hence which can never have had labor troubles in connection with it nor its production of corn reduced by competition with other crops. It is in this area that the third reason against corn growing is at its strongest, it being prohibitive here. Lack of water makes a large part of California's agricultural land unfit for corn growing, because the corn plant must have water either by irrigation or from a naturally moist or sub-irrigated soil. Thus, a large part of the State is ruled out at once. Furthermore, irrigation is expensive, and on land that requires a great deal of irrigation water, it may be the item of expense that changes the balance from profit to loss. At any rate, the larger part of the land under irrigation will generally produce a variety of crops some of which, like alfalfa and various fruits, will pay larger dividends on the money investment required to produce those respective crops. Indeed, it seems that corn as a direct paying crop considered by itself, exclusive of rotation or as part of a general system of agriculture, is limited to such areas as the overflowed lands along the Sacramento River and its tributaries, where an annual crop can be grown when planted late in the spring, and to lands which supply moisture to the corn wholly or in part from sub-irrigation or retained winter rainfall, and, in addition, are not well adapted to those crops usually grown in more extensive farming. Some of these lands have rather too much alkali for Indian corn, giving Egyptian corn an advantage, as is the case on the west side of the Sacramento River in Colusa County and some of the moist and irrigated lands between Fresno and Tulare Lake.

#### REASONS FOR CORN GROWING.

Notwithstanding the reasons advanced against corn growing and the facts stated which tend to make corn growing difficult and unprofitable, there are some facts in favor of the growing of King Corn. Chief among these is the fact that there is a distinct advantage in the use of corn in rotation with other cereals. This advantage is twofold, dividing itself into the advantage of better physical and chemical condition of the soil, which arises from the summer cultivation given corn, and the advantage of riddance of weeds from this same cultivation. A number of farmers realize this advantage to be great enough so that they grow some corn each year, even though the crop itself is not as profitable as



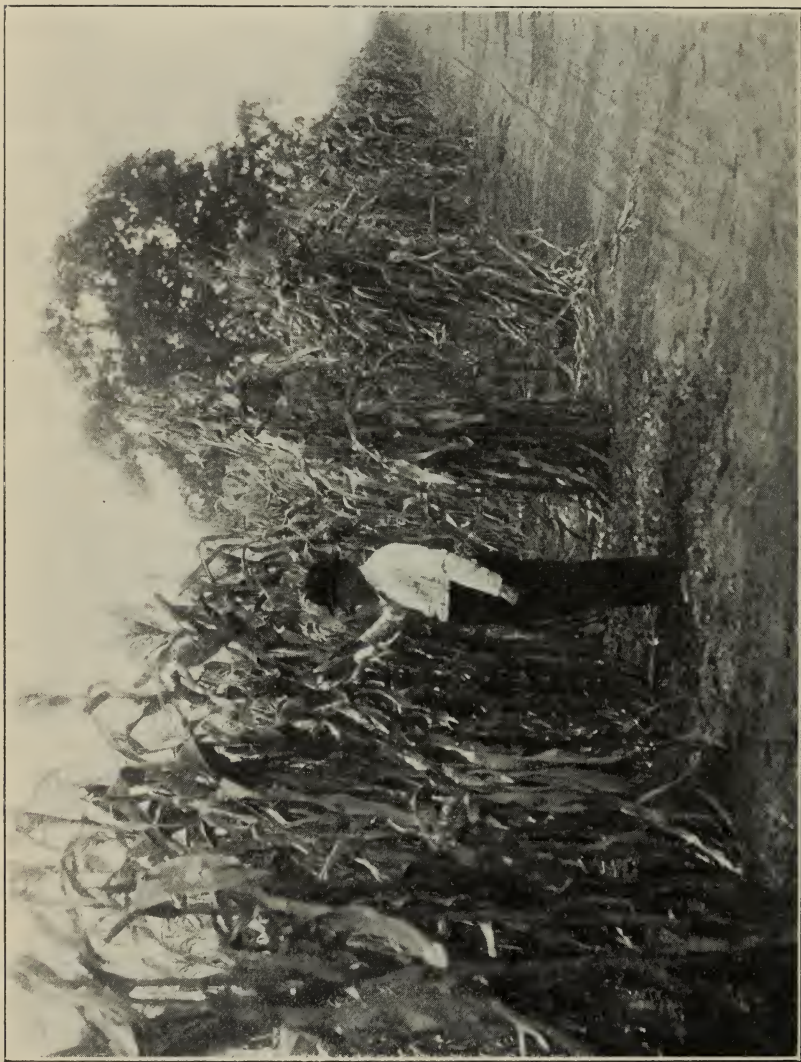


FIG. 5.—A cornfield near Stockton. Variety, yellow Dent.

a crop of small grain. They find that the total profit during a series of years is greater where corn is used in rotation. Probably very few farmers have definite systems of rotation on all their cultivated land into which corn enters, but some do at least hold to a more or less definite system into which corn enters as one crop of the series on the land which is at all suitable for it. Almost any cultivated crop will enter into rotation with similar advantages to the soil, varying, however, in degree. The adaptability of the particular cultivated crop which is used to the locality and to the use which can be made of it will always largely govern the selection.

For use in a rotation with small grains on moderately moist lands, corn has particular adaptations. It is a crop, the production of which does not interfere seriously with the production of small grains when labor is kept on the farm throughout the year. In fact, it helps to distribute the work more evenly throughout the season than a single crop will do. It is planted after the seeding of small grains is completed and is harvested just before autumn rains. It leaves the ground in a better physical or chemical condition for small grain crop than any of the sorghums as Kaffir corn, Egyptian corn, etc. A part of the benefit to soil doubtless comes from the deeper plowing which is usually given corn and part from the summer cultivation. It is customary to plow the land about sixty to seventy-five per cent deeper for corn than for barley. The benefit of deeper plowing might be obtained in continuous cropping to barley, but the benefit of summer cultivation can not. Aside from the amount of moisture it contains, a properly cultivated cornfield is in as good physical condition for the next crop as a summer-fallow which has been plowed deep and cultivated to keep the weeds down.

The use of corn in some sort of rotation with small grains to keep the weeds out is an important one. With few exceptions the weeds that bother in the barley field will be eradicated by rotation with corn. On the other hand, the weeds such as morning-glory and Johnson grass that are worst in the cornfield, are not bad in the barley field. Furthermore, the change from one crop to another with its different method of culture helps in keeping down the worst weed pests of both crops. Along the Merced River Johnson grass is very bad in the cornfields, but it is because in many fields corn has been grown continuously and without proper cultivation or attention to the destruction of weeds. The maximum benefit from rotation is obtained only when the best culture is given corn. The culture which will give the largest yield of corn will benefit the soil most. It is the opinion of the writer that too little attention has been given to this aspect of corn growing in California.

Another reason for growing corn in this State and one which increases the area grown is that it is sometimes planted after a hay crop has been

removed, giving a second crop the same year. This is very commonly practiced in the region between Fresno and Tulare Lake and where irrigation water is abundant on the naturally moist lands. In such cases the corn is planted about July 1st.

On the drier lands of this region more Egyptian corn, Kaffir corn or Milo maize is planted at this time after a hay crop because of its smaller demand for water. The method is being tried on the University Farm at Davis, corn having been planted there the middle of July on land subject to irrigation. On land in the Imperial Valley two crops of corn have been grown the same year on the same ground, seed for the



FIG. 6.—An Egyptian cornfield.

second planting having been taken from the first crop. The area grown in the State as a second crop is very small compared with the total area of corn. Where the practice is followed, special attention should be given to include in the rotation some leguminous crop, at least a part of which should go under as green manure.

Another reason for growing corn is that some land is better adapted to it than to small grain. Aside from the overflowed lands which must be planted to some late spring crop, and which, because of this, are not suitable for small grain, there are certain moist, rich, bottom lands with soil conditions ideal for corn growing, but where rust and lodging make small grain production uncertain. Part of the Merced River bottom, as well as considerable along the Feather River, is in this class. Corn



growing has also been very profitable along the Cosumne River, and formerly was largely grown in the tule lands of the Santa Ana country. On the sand hills near the coast in Los Angeles County, barley falls down badly, seeming to have very little strength of straw. But even where the sand is so light as to blow badly it retains moisture sufficient to mature fair crops of corn. Some of the largest cornfields in the State are on such soil.

A great many small fields of corn are grown to furnish part of the food ration of hogs or other stock. It is not uncommon for the small farmer to offer as his reason for growing corn on the odd pieces of land or his smaller fields, that "it is good to have a little corn for feed." It is considered, and rightly so, to be the best single feed which can be produced for hog feeding and as a part of the ration of other stock. Its value as feed on the farm is a factor which the more extensive grain farmer scarcely considers aside from its commercial value, as he usually puts his corn on the market as soon as it will shell.

#### CAUSES OF SUCKERING.

A great many inquiries were made of the corn growers regarding the cause of suckers. Several different factors are said to cause this, two of which, viz., rich soil and abundant moisture were named by the majority of persons interviewed. Among other causes were given early planting, shallow planting, thin stand, good cultivation and cold nights. There seems to be no doubt that with abundant moisture and plant food, corn will sucker more than in poorer, dryer soil. The other causes named can mostly be shown to be closely related to either of these two. There is usually more moisture in the soil at the time of early planting; likewise a thin stand allows each stalk more moisture and plant food; while thorough cultivation saves the moisture for the use of the corn plant and helps to liberate plant food. Almost anything which tends toward a vigorous growth of the plant seems to favor the growth of suckers and make them more numerous. It is not so evident in what way the difference said to be due to depth of planting can be explained. It is a fact that the suckers can be smothered out or prevented from starting by throwing dirt to the corn when it is young, and that corn planted with a lister and having the furrow filled in with dirt by early cultivation suckers very little. But as surface-planted corn roots at the same depth whether planted deep or shallow, the way in which the amount of suckering could be influenced by depth of planting is not seen. Professor Hilgard stated to the writer that he considered that anything which tended to make corn fruit would tend to cause suckers, because the vegetative growth in the main stalk would be more or less depressed; and further, that anything which tended to depress the

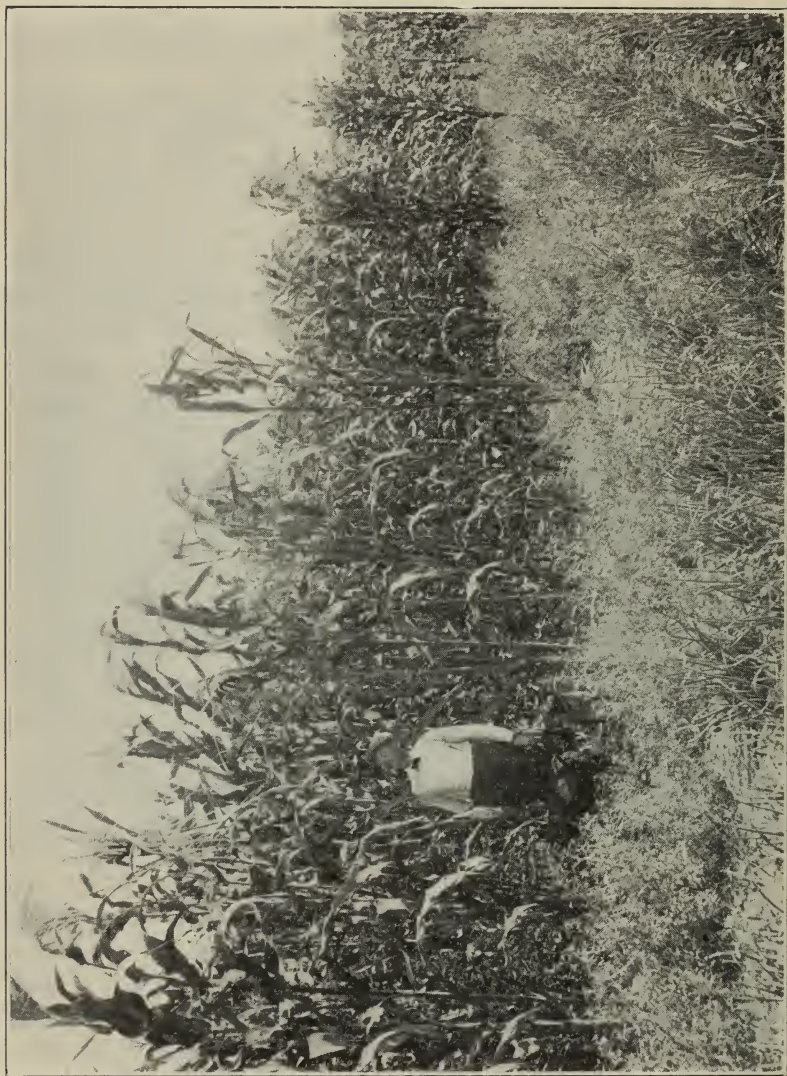


FIG. 7.—A cornfield in Livingston, Merced County, California. Corn 12 feet high.

vegetative growth in the main stalk would tend to cause suckers. He also suggested that a high lime and phosphorus content of soils might cause suckering because of its tendency to make the corn fruit. One instance is noted, that of the lava soil around Paradise, which is deficient in both lime and phosphorus, and in which corn suckers but very little and fruits but very little, though the growth of the stalk is good. It is a common opinion of the farmers that corn which does not sucker will usually give a poor yield of grain.

Considering that the depression of the main stalk or the vegetative growth causes suckering, we can easily see that the cool nights would, as has been stated, cause suckering; for corn, more than any other of the common cereals, likes warm nights as well as days to push its growth. And as the corn suckers very little in the great corn growing states of the Middle West, which have in general much warmer summer nights than California or the northern states of the Middle West, it seems likely to the writer that the cool nights are quite largely responsible for the excessive growth of suckers in this State, as well as in northern Nebraska, the Dakotas and Minnesota. It seems that the amount and kind of plant food may be a smaller factor, otherwise there would be more variation in the growth of suckers in the great corn-growing belt. The cause of more suckers in moist and rich lands might be attributed also to the effect of cool nights, considering that a rank and vigorous growth of almost any plant is more tender and more susceptible to climatic influences. There seems to be a good opportunity for further investigation on this line, with promise of results of both scientific and practical value.

In regard to the amount which different varieties of corn sucker there are not enough data at hand to classify the varieties in order in this respect. However, the flint varieties commonly sucker more than the dent varieties; and varieties brought to California from east of the Rockies are said not to sucker as much for two or three years as the native corn or the corn which has been grown in this State several years. Two varieties of California grown corn, King Philip and Hickory King, which sucker badly in this State, were planted this season in southwestern Missouri on rich, loamy, bottom land, a good corn soil, and did not sucker at all.

#### THICKNESS OF PLANTING.

The thickness of planting must depend largely upon the water supply. In general, thinner planting is advisable in this State than in the corn belt, because of excessive suckering here and lack of summer moisture. Thicker planting is advisable on moist land than on dry land. On the University Farm, at Davis, the outer rows of one plat of corn without irrigation are very much better than the inner rows,



doubtless because they could reach more moisture than the inner rows. The average distance apart of these stalks is 44 by 18 inches. This is too close for any but naturally moist or irrigated soil. Forty-four by twenty-four inches would be better.

#### TIME TO MATURITY.

Reports indicate that corn matures later here than in the corn belt, or that after being practically mature, it requires a much longer time to dry up. Because of late maturity and because it is generally desired to get the corn to market as soon as possible, early maturing varieties are sought.



FIG. 8.—A cornfield in the Guill ranch near Chico, Butte County, California.

#### QUALITY OF THE CORN.

It is quite generally believed by the California growers that California corn, even the dent varieties, are harder and more flinty than the eastern corn. It is commonly preferred for feed because it is said to be stronger; and flint varieties if ground are preferred to dent varieties.

#### DISPOSITION OF THE STALKS.

The stalks are usually left in the field and pastured. It seems that the blades and husks are heavier and coarser and hence not as well liked by cattle as the eastern corn. After being pastured, the stalks are usually raked and burned. It would be better for the land to cut them with a stalk cutter and turn them under with a plow. Some farmers

object to this method because it takes so long for the stalks to decay. Some fields of corn are cut green and ensiled. In this way a large amount of feed of good quality, up to as high as fifty tons per acre, can be obtained.

#### USE OF HUSKS FOR TAMALES WRAPPERS.

While the husk is generally thick, coarse and heavy, weighing perhaps twice as much as Illinois husks, certain varieties, as the Small Round Yellow or King Philip or Spanish corn, and a variety grown so long on the Merced River as to be called Old River White, have very thin papery husks which are highly esteemed for tamale wrappers. From the latter variety about 200 to 300 pounds of husks per acre are obtained. A Chinaman at Snelling, who has had large experience, says he expects to get one ton of husks from six tons of corn. The price received for husks for tamale wrappers by the growers or the party who first markets them is now about four cents a pound. Formerly it was much more. The retail price is now much higher, perhaps fifteen cents a pound.

It is a common practice to get the corn harvested for the husks. A man can easily get a hundred pounds of husks in a day. But as the contracts to husk corn are so readily broken by the Mexicans and the husks not so much in demand as formerly, the corn growers are becoming less willing to have their corn harvested in that way. The method of saving the husks is to break off the ears with the entire husk, throwing them in piles; and then bring the entire family of women and children to husk the ears. The husks are laid evenly in bales, averaging about sixty pounds per bale.

#### THE CORN WORM.

The corn earworm, *Heliothis armiger*, is a great pest. The adult moth lays eggs on the corn and the worm, hatching from the egg, finds its way into the ear, eating into and destroying much corn. In fields where sweet corn is planted near, the trouble is much less in the field corn, as the moth prefers to deposit eggs on the sweet corn. The sweet corn may be ruined, but the field corn will be comparatively free from worms. Some varieties of field corn, like Huron Dent, pass the roasting ear stage so quickly that the worms trouble it but little. It is also probable that the worm prefers certain varieties and is at its worst in them.

#### VARIETIES GROWN.

The usual names given to varieties grown in California are merely descriptive terms, as "Large Yellow Dent" or "Small White." There are certain varieties, however, that are well defined. Among these are

King Philip, frequently called Small Yellow or Spanish corn, Hickory King, California Yellow Dent,\* and a small amount of the standard Middle West varieties, such as Reid's Yellow Dent, Leaming, Iowa Silvermine, and others. It does not seem that these latter varieties continue to be known by their respective names very many years, perhaps because they become mixed with other varieties, and gradually have the descriptive names applied to them more and more.

#### METHOD OF IRRIGATION.

The row system is generally used in irrigating. Furrows are made between all the rows and water is run into these until it crosses the field. Varying amounts of water are used, depending upon the soil and the cost and abundance of available water. The greatest need of water is at time of tasseling and earing, hence those sections that have water available through July and August are favored. If the cornfield is flooded, the corn is very likely to scald in the hot sun, especially before the corn is large enough to fully shade the ground.

#### IMPROVEMENTS DESIRED BY THE GROWERS.

The thing most generally desired by the growers is a variety which will give a fair yield of corn without such an excessive growth of suckers as present varieties have. Selection of corn should be undertaken having this feature in view. A shorter season variety is desired by many farmers. There are short season varieties now grown by a few farmers, through whom some seed distribution might be made to satisfy desires in this direction.

A few growers would like to see selection undertaken to increase the yield of corn as has been done in the Middle West. Most farmers, however, are too busy with other crops, or with labor problems in connection with corn growing, to have given any thought to this matter. A large number of growers would like to see selection undertaken to reduce the size of the stalk and to lower the position of the ear. This would make the labor of harvesting very much less.

Probably the greatest help that can be given the corn grower will be dissemination of information as to how he can help himself to overcome certain difficulties in corn growing—things that can be easily done but with which he is not familiar because he has not had what might be called a "corn experience." For instance, the grower should help himself to short season varieties if he wants them, and by merely having the way pointed out, to lower stalk growth and lower position of the ears; also how to avoid the worst ravages of the earworm. It will be less expensive to the station to give such information than to supply the desired seed, and will be more appreciated by the grower.

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\*A hybrid produced by Mr. W. C. Sheldon, Cosumne.